

TYPHOON ROGER (08W)

Typhoon Roger was initially enhanced by a Tropical Upper-Tropospheric Trough (TUTT) cell as described by Sadler (1976). On 4 July 1986, as Typhoon Peggy was moving toward the west, away from Guam, a TUTT cell was observed moving west-northwestward from a location 780 nm (1445 km) east of Wake Island. The well-developed TUTT cell and its associated convection continued this movement for the next five days. By 8 July, a tropical disturbance had developed from this area of convection about 30 nm (56 km) southwest of Enewetak Atoll. It persisted into the next day when it was included in the Significant Tropical Weather Advisory (ABPW PGIW) for the first time. Initially, Roger showed little potential for development into a tropical disturbance. Over the next two days,

however, the convective area became more organized as cross-equatorial westerlies converged with the tradewind easterlies at low-levels and an anticyclone formed aloft.

The divergent upper-level flow southeast of the TUTT cell continued to provide a favorable environment for the tropical disturbance to develop slowly during the next three and a half days. A Tropical Cyclone Formation Alert (TCFA) was issued for the system at 110717Z. Satellite imagery (Figure 3-08-1) at 120024Z July shows the tropical depression. The first warning was issued at 130000Z, because the system continued to increase in convective organization and a minimum sea-level pressure of 999 mb was observed by aircraft reconnaissance at 122245Z.



Figure 3-08-1. Roger as a tropical depression. Note the effect of the TUTT cell northwest of the depression which causes a deformation and enhancement of the cirrus outflow pattern to the southeast (120024Z July DMSP visual imagery).

During all stages of development, Typhoon Roger remained small in size. Aerial Reconnaissance Weather Officers flying into Roger consistently reported the diameter of the light and variable surface wind center as 1 nm (2 km) to 4 nm (7 km). Figure 3-08-2 shows Roger's small eye and central convective mass.

JTWC accurately forecast Roger's track and point of recurvature. Roger moved west-northwestward while south of the 700 mb subtropical ridge; then northward, and later northeastward as it recurved around the western end of the ridge. Figure 3-08-3 shows the location and orientation of the subtropical ridge as reflected in the 700 mb data on 131200Z July. The guidance from the One-way Interactive Tropical Cyclone Model (OTCM), JTWC's primary forecast aid, was generally good although the model repeatedly suggested a tighter recurvature track at the 24-hour point (approximately 180 nm (333 km) farther to the east) than was actually observed. Figure 3-08-4 is a plot of the initial and 24-hour points from the OTCM showing this bias toward the east.

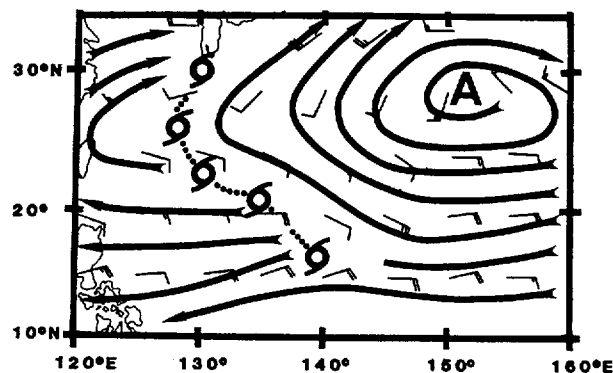


Figure 3-08-3. The 700 mb Wind Analysis on 131200Z July showing location and orientation of the subtropical ridge that influenced Roger's movement. The dashed line shows Typhoon Roger's eventual track.

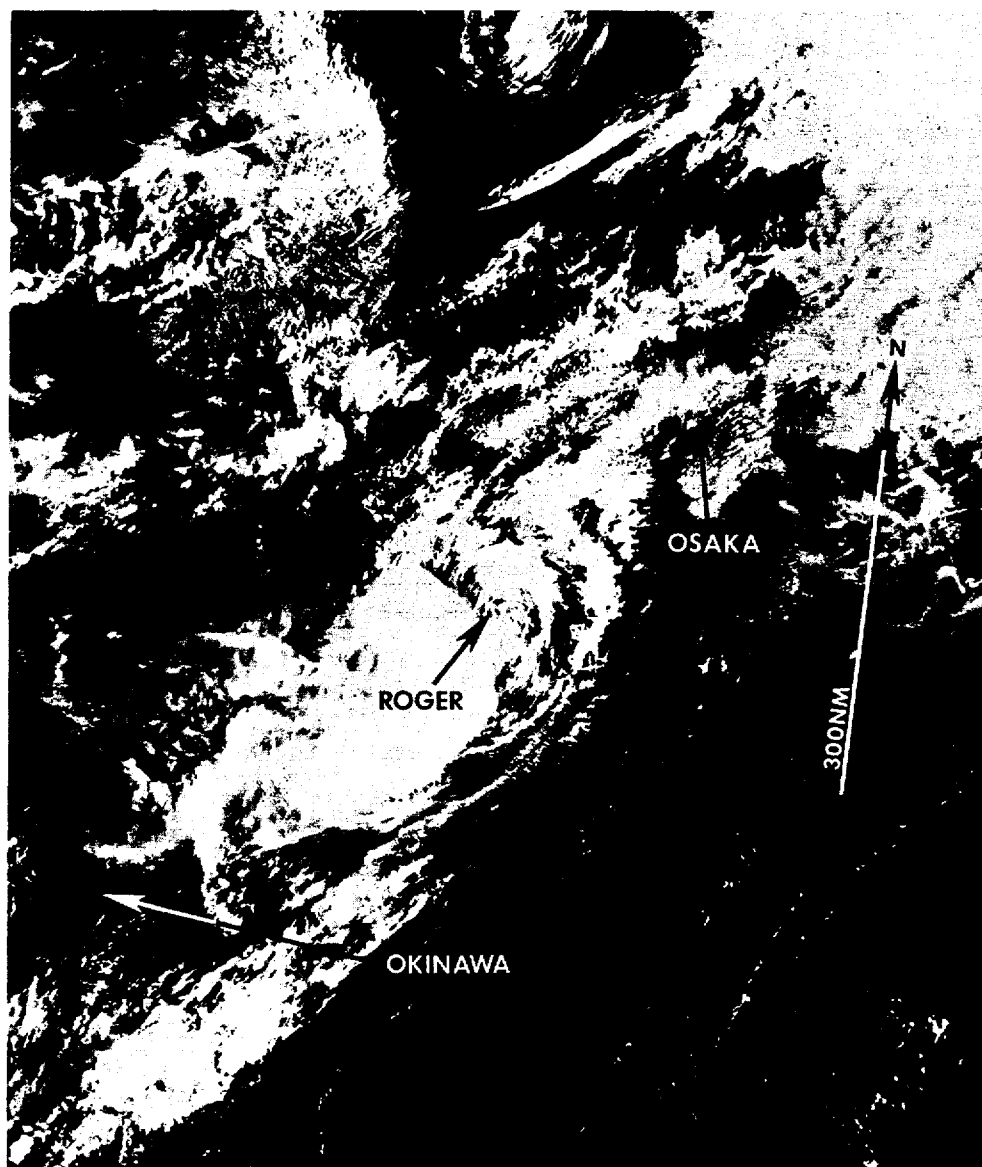


Figure 3-08-2. Typhoon Roger near maximum intensity. A small eye is present in the central convective mass (150104Z July DMSP visual imagery).

After recurvature toward the northeast, Typhoon Roger began extratropical transition as it encountered the shearing environment that caused its convection to be displaced to the southwest of the low-level circulation center (Figure 3-08-5). This shearing away of the central convection caused Roger to weaken further. The stratified nature of the low-level cloud (in Figure 3-08-5) is indicative of extratropical transition.

Although Typhoon Roger passed just 45 nm (83 km) east of the island of Okinawa and Kadena Air Base, the effect was minimal due to its small size. Peak gusts of 43 kt (22 m/sec) were reported and the northern part of the island received about 1 inch (25.4 mm) of rainfall. "U.S. military installations on Okinawa spent most of Wednesday (16 July) in typhoon condition one (and) Japanese schools were closed during the day. Approximately 4000 tourists were stranded briefly at Naha Airport during the day as 21 flights were cancelled because of the storm. Airline officials said all those passengers were on their way by late afternoon." There were no reports of injuries or significant damage on Okinawa or to shipping.

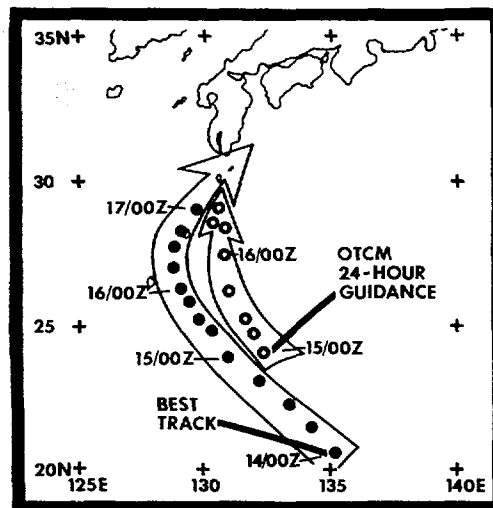


Figure 3-08-4. Plot of OTCM (One-way Interactive Tropical Cyclone Model) forecast tracks for period 140000Z to 161800Z July.

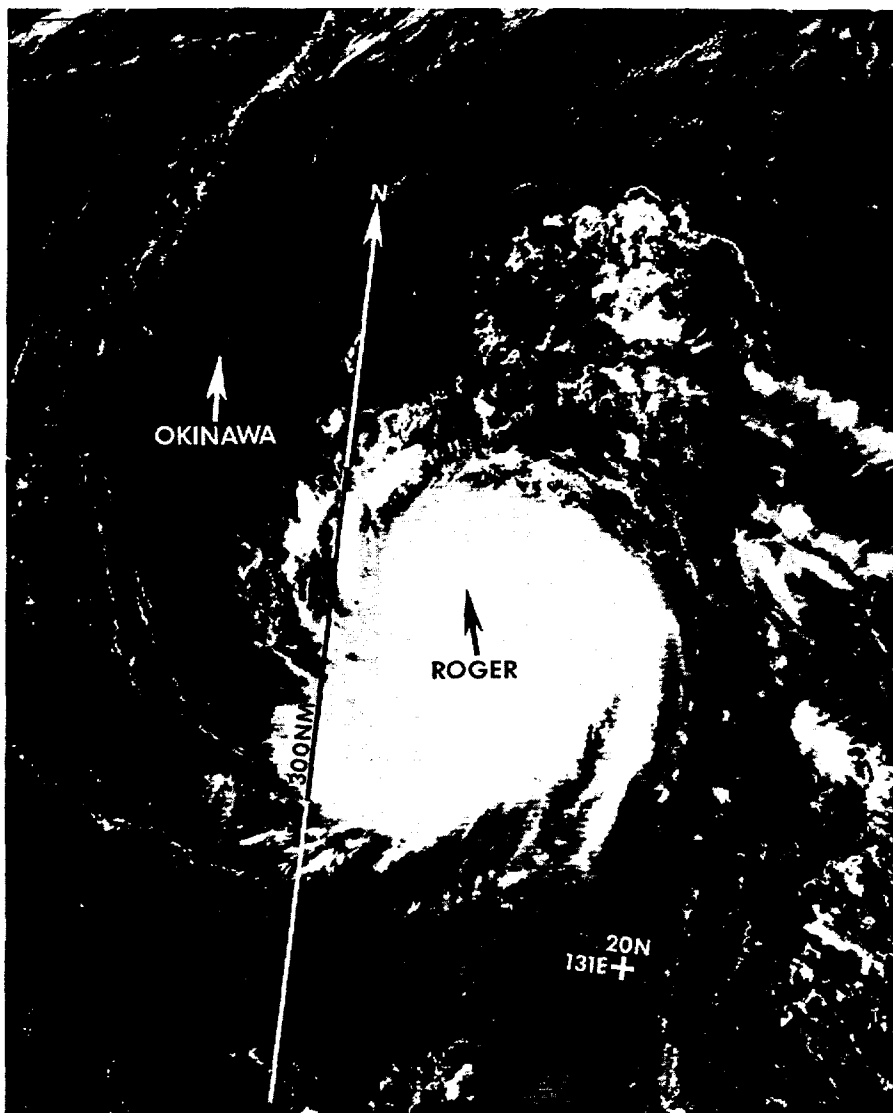


Figure 3-08-5. Satellite imagery of Roger showing the exposed low-level circulation center and central convection displaced to the southwest. Note the stratified nature of the low-level clouds associated with extratropical transition (170527Z July NOAA visual imagery).